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10/599,647	10/04/2006	Thomas Fischer	P09028US00/RFH	2200

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EXAMINER	
TADAYYON ESLAMI, TABASSOM	
ART UNIT	PAPER NUMBER
1792	
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07/21/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/599,647	FISCHER, THOMAS	
	Examiner	Art Unit	
	TABASSOM TADAYYON ESLAMI	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-11 and 13-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-11, 13-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/11/09 has been entered.

DETAILED ACTION

Claims 11, and13 are interpreted under 35 USC 112, 6th paragraph to cover the corresponding structure. Based on the disclosure at, 17th full paragraph, the term "means for producing a homogenous surface tension" of the claim11 has been interpreted as a means for corona treatment. Based on the disclosure at 18th and 20th full paragraph the term "means for reducing the surface tension of the substrate in the first or second region to a lower value" interprets as a roller with uneven surface. In claim 11, "means for application of the functional material the substrate" interprets as rolling process, a spraying process, a dipping process or a curtain coating process, based on paragraph 22 of the specification.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by George Roland Hill et al (U. S Patent Application: 2004/0045931, here after Hill).

3. Claim 11 is rejected. Hill teaches a method of producing structures (pattern) from functional materials (ink) [0002, 0006 lines 4-8], in which in the surface of the substrate

is treated so different areas with different surface energy appears on the surface [0058, abstract last 3 lines] and depositing the functional materials. Hill teaches a means for creating a homogeneous surface tension of substrate higher than initial state of the substrate (corona discharge apparatus) [0025, 0026, and 0031], means for reducing the surface tension of the substrate in the first or second region to a lower value (patterning) and means for application of the functional material to the surface (ink jet printer) [0058-0059].

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 15, 8, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable by J. Devin MacKenzi (U. S. Patent: 7276385, here after 385), further in view of George Roland Hill et al (U. S Patent Application: 2004/0045931, here after Hill).

Claim 15 is rejected. 385 teaches,

Method of producing structures (pattern) from electrical functional materials [abstract lines 3-6] on a substrate, in which in a first method step the substrate is pretreated in such a way that at least a first (between the pattern, where it needs the repair) and a second region (within the pattern) are formed with different surface tensions [column 23 lines 45-55], the first region being configured in the shape of the

structure to be produced (repaired area), and in a second method step the electrical functional material is applied to the substrate, the functional material being configured so that it is deposited only in the first region (repaired area) and thus the desired structure is formed from functional material [column 23 lines 53-59]. 385 further teaches in a first method step first of all high surface tension of the substrate is produced [column 23 lines 47] and then the surface tension of the substrate is reduced to a lower value in the first or second area with direct contact with a contact structure(photoresist)[column 23 lines 48-52] which reduces the surface tension at the first region to a lower value(resist area) than that of an adjacent second region, one of eth first or second regions having a shape corresponding to that of eth structure to be produced. 385 does not specifically teach treating the surface to increase the surface tension homogeneously which is higher relative to the normal state of the substrate with corona treatment. Hill teaches a method of producing structures (pattern) from functional materials (ink) [0002, 0006 lines 4-8], in which in the surface of the substrate is treated so different areas with different surface energy appears on the surface [0058, abstract last 3 lines] and depositing the functional materials, thus the desired structure is formed from functional material [0059 lines 8-17]. Hill further teaches the first method step first of activating a surface of the substrate with a corona treatment to produce a homogeneous surface tension of the substrate is produced which is higher relative to the normal state of the substrate and then the surface tension of the substrate is reduced to a lower value in the first or second region [0025, 0026, 0031]. Hill further teaches the production of the homogeneous surface tension takes place by a corona

treatment [0023 lines 1-7, 0049]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to produce a structure of functional material with the method that 385 teaches, where the surface is treated homogeneously to get higher surface energy as Hill teaches, because Hill teaches it is suitable to deposit the electrical functional material on a patterned surface where the surface is treated so the surface energy is higher with respect to the normal status.

Claim 8 is rejected. 385 and Hill teach the limitation of claim 15 and 385 further teaches in the second method step (depositing the functional material) the functional material is applied in a spraying process in which the substrate surface is sprayed with the functional material [column 5 lines 1-5], the functional material being deposited only in the region with suitable surface (higher) tension because of the different surface tensions [column 23 lines 55-, 64].

2. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over J. Devin MacKenzi (U. S. Patent: 7276385, here after 385) and George Roland Hill et al (U. S Patent Application: 2004/0045931, here after Hill), further in view of Daido Komyoji et al (U. S. Patent Application: 2002/0050061, here after 061).

385 and Hill teach the limitation of claim 15 as discussed above. 385 teaches the patterned surface further comprises low surface energy and high surface energy areas [column 23 lines 45-50], where the functional materials deposited on the surface with high surface energy [column 23 lines 45-64]. Neither of them teaches the deposition of the functional particles is done with a roller. 061 teaches a method of forming a pattern structure [abstract lines 1-3] from the electrical functional materials to make circuit

boards [0001]. 061 further teaches the applying of the particles to the surface is done via a roller [fig. 2]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to produce a structure of functional material with the method that 385 teaches where the functional material is applied to the surface via a roller as 061 teaches, because 061 teaches it is appropriate to apply the functional material to form a patterned surface with a roller.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over J. Devin MacKenzi (U. S. Patent: 7276385, here after 385) and George Roland Hill et al (U. S Patent Application: 2004/0045931, as applied to claim 15 above, further in view of Philip G. Bentley et al (U. S. Patent Application: 2005/0130397, here after 397). 385 and Hill teach the limitation of claim 15 as discussed above. 385 teaches the patterned surface further comprises low surface energy and high surface energy areas [column 23 lines 45-50], where the functional materials deposited on the surface with high surface energy [column 23 lines 45-64]. Neither of them teaches the deposition of the functional particles is done by dipping process. 397 teaches a method of forming a pattern on a substrate such as printed circuit boards [0002 1-8]. 3970further discloses the pattern can be form by a functional liquid (liquid material containing functional material) and by dipping method [0004]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to produce a structure of functional material with the method that 385 teaches where the functional material is applied to the surface

via dipping as 397 teaches, because 397 teaches it is appropriate to apply the functional material to form a patterned surface with dipping it in a functional liquid.

3.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over J. Devin MacKenzi (U. S. Patent: 7276385, here after 385) and George Roland Hill et al (U. S Patent Application: 2004/0045931, here after Hill), further in view of Mark Lelental et al (U. S. Patent: 7033713, here after 713).

Claim 10 is rejected. 385 and Hill teach the limitation of claim 15 as discussed above. They do not specifically teach the functional material is applied in a curtain coating process. 713 teaches a method of forming conductive features on a substrate) [column 4 lines 26-32] and he further teaches the conductive features (particles) applied to the substrate by curtain coating method [column 15 lines 50-58]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to produce a structure that 385 teaches where the functional material is applied by curtain coating as 713 teaches, because 713 teaches it is suitable to apply the functional material to a substrate by curtain coating method.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over J. Devin MacKenzi (U. S. Patent: 7276385, here after 385) and George Roland Hill et al (U. S Patent Application: 2004/0045931, hereafter Hill) as applied to claim 1 above, further in view of Virgan G. Shah et al , Micro Fab. Tech. Inc, ICP Printed Circuit (2002, pages 1-5), here after Shah. 385 and Hill teaches the limitation of claim 15. They teach a method of repairing circuit by deposition of electronic functional material on the repair area.

They do not teach the electric functional material is conductive polymer. Shah teaches a method of repairing integrated circuit by deposition of an ink comprising conductive polymer [title and abstract]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to produce a structure that 385 and Hill teaches where the electric functional material is comprising conductive polymer, because Shah teaches it is suitable to repair IC's with ink comprising conductive polymer.

5. Claims 15, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over J. Devin MacKenzi (U. S. Patent: 7276385, here after 385) and George Roland Hill et al (U. S Patent Application: 2004/0045931, here after Hill), further in view of Gerald M. Fletcher (U. S. Patent: 3981498, here after Fletcher).

Claim 15 is rejected. 385 teaches,

Method of producing structures (pattern) from electrical functional materials [abstract lines 3-6] on a substrate, in which in a first method step the substrate is pretreated in such a way that at least a first (between the pattern, where it needs the repair) and a second region (within the pattern) are formed with different surface tensions [column 23 lines 45-55], the first region being configured in the shape of the structure to be produced (repaired area), and in a second method step the electrical functional material is applied to the substrate, the functional material being configured so that it is deposited only in the first region (repaired area) and thus the desired structure is formed from functional material [column 23 lines 53-59]. 385 further teaches in a first method step first of all high surface tension of the substrate is

produced [column 23 lines 48-52] which reduces the surface tension at the first region to a lower value(resist area) than that of an adjacent second region, one of eth first or second regions having a shape corresponding to that of eth structure to be produced. 385 does not specifically teach treating the surface to increase the surface tension homogeneously which is higher relative to the normal state of the substrate with corona treatment. Hill teaches a method of producing structures (pattern) from functional materials (ink) [0002, 0006 lines 4-8], in which in the surface of the substrate is treated so different areas with different surface energy appears on the surface [0058, abstract last 3 lines] and depositing the functional materials, thus the desired structure is formed from functional material [0059 lines 8-17]. Hill further teaches the first method step first of activating a surface of the substrate with a corona treatment to produce a homogeneous surface tension of the substrate is produced which is higher relative to the normal state of the substrate and then the surface tension of the substrate is reduced to a lower value in the first or second region [0025, 0026, 0031]. Hill further teaches the production of the homogeneous surface tension takes place by a corona treatment [0023 lines 1-7, 0049]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to produce a structure of functional material with the method that 385 teaches, where the surface is treated homogeneously to get higher surface energy as Hill teaches, because Hill teaches it is suitable to deposit the electrical functional material on a patterned surface where the surface is treated so the surface energy is higher with respect to the normal status. They do not teach the reduction of the surface tension takes place by contact with a

contact structure. Fletcher teaches a method of forming pattered structure by creating charged pattern area on substrate by a textured roller [abstract lines 1-3]. Fletcher further teaches the roller with constant charge will apply the charge on the substrate where the features are in contact with the surface. Since the surface energy depended on surface charge, therefore if the charged roller is in opposite charge with the substrate, the surface tension reduces in areas that the roller features touched the substrate. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to produce a structure that 385 teaches where the reduction in surface tension (neutralizing the localized charges) takes place with a roller having features with (opposite) charge, because Fletcher teaches it is appropriate to make a charged pattern on a substrate by a textured roller.

Claims 11 and 13 are rejected. 385, Hill, and Fletcher teach the limitation of claim 15 as discussed above. 385 teaches a means for applying functional material to the substrate (in form of liquid, spray) [column 24 lines 46-35]. 385 does not teach the means for creating a homogeneous surface tension of substrate higher than initial state of the substrate (corona discharge). Hill teaches a method of producing structures (pattern) from functional materials (ink) [0002, 0006 lines 4-8], in which in the surface of the substrate is treated so different areas with different surface energy appears on the surface [0058, abstract last 3 lines] and depositing the functional materials. Hill teaches a means for creating a homogeneous surface tension of substrate higher than initial state of the substrate (corona discharge) [0025, 0026, and 0031]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to

produce a structure that 385 teaches with creating a homogeneous surface tension of substrate higher than initial state of the substrate (corona discharge) as Hill teaches, because Hill teaches it is suitable to deposit the electrical functional material on a patterned surface where the surface is treated so the surface energy is higher with respect to the normal status. Fletcher teaches a method of forming pattered structure by creating charged pattern area on substrate by a textured roller [abstract lines 1-3]. Fletcher further teaches the roller with constant charge will apply the charge on the substrate where the features are in contact with the surface. Since the surface energy depended on surface charge, therefore if the charged roller is in opposite charge with the substrate, the surface tension reduces in areas that the roller features touched the substrate. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to produce a structure that 385 teaches where the reduction in surface tension (neutralizing the localized charges) takes place with a roller having features with (opposite) charge, because Fletcher teaches it is appropriate to make a charged pattern on a substrate by a textured roller.

6. Claims 15, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over J. Devin MacKenzi (U. S. Patent: 7276385, here after 385) and George Roland Hill et al (U. S Patent Application: 2004/0045931, here after Hill), further in view of Heung-Lyul Cho et al(U. S. Patent Application: 2004/0196416, here after Cho).

Claim 15 is rejected. 385 teaches,

Method of producing structures (pattern) from electrical functional materials [abstract lines 3-6] on a substrate, in which in a first method step the substrate is pretreated in such a way that at least a first (between the pattern, where it needs the repair) and a second region (within the pattern) are formed with different surface tensions [column 23 lines 45-55], the first region being configured in the shape of the structure to be produced (repaired area), and in a second method step the electrical functional material is applied to the substrate, the functional material being configured so that it is deposited only in the first region (repaired area) and thus the desired structure is formed from functional material [column 23 lines 53-59]. 385 further teaches in a first method step first of all high surface tension of the substrate is produced [column 23 lines 48-52] which reduces the surface tension at the first region to a lower value (resist area) than that of an adjacent second region, one of eth first or second regions having a shape corresponding to that of eth structure to be produced. 385 does not specifically teach treating the surface to increase the surface tension homogeneously which is higher relative to the normal state of the substrate with corona treatment. Hill teaches a method of producing structures (pattern) from functional materials (ink) [0002, 0006 lines 4-8], in which in the surface of the substrate is treated so different areas with different surface energy appears on the surface [0058, abstract last 3 lines] and depositing the functional materials, thus the desired structure is formed from functional material [0059 lines 8-17]. Hill further teaches the first method step first of activating a surface of the substrate with a corona treatment to produce a homogeneous surface tension of the substrate is produced which is higher relative to

the normal state of the substrate and then the surface tension of the substrate is reduced to a lower value in the first or second region [0025, 0026, 0031]. Hill further teaches the production of the homogeneous surface tension takes place by a corona treatment [0023 lines 1-7, 0049]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to produce a structure of functional material with the method that 385 teaches, where the surface is treated homogeneously to get higher surface energy as Hill teaches, because Hill teaches it is suitable to deposit the electrical functional material on a patterned surface where the surface is treated so the surface energy is higher with respect to the normal status. They do not teach the reduction of the surface tension takes place by contact with a contact structure. Cho teaches a method of forming pattered structure by creating pattern on surface by transferring resist material from a roller to a substrate(contact structure) [fig. 4.b, 0065]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to produce a structure that 385 teaches where the reduction in surface tension (patterning) takes place with a roller having features, because Cho teaches it is appropriate to make a resist pattern on a substrate by a roller.

Claims 11 and 13 are rejected. 385, Hill, and Cho teach the limitation of claim 15 as discussed above. 385 teaches a means for applying functional material to the substrate (in form of liquid, spray) [column 24 lines 46-35]. 385 does not teach the means for creating a homogeneous surface tension of substrate higher than initial state of the substrate (corona discharge). Hill teaches a method of producing structures

(pattern) from functional materials (ink) [0002, 0006 lines 4-8], in which in the surface of the substrate is treated so different areas with different surface energy appears on the surface [0058, abstract last 3 lines] and depositing the functional materials. Hill teaches a means for creating a homogeneous surface tension of substrate higher than initial state of the substrate (corona discharge) [0025, 0026, and 0031]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to produce a structure that 385 teaches with creating a homogeneous surface tension of substrate higher than initial state of the substrate (corona discharge) as Hill teaches, because Hill teaches it is suitable to deposit the electrical functional material on a patterned surface where the surface is treated so the surface energy is higher with respect to the normal status. Cho teaches a method of forming pattered structure by creating pattern area on substrate by a roller [fig. 4.b]. Cho further teaches the roller with resist which transfer the resist to the substrate (resist has less surface energy), where the raised contact structure is in contact with the surface of the substrate [0065, fig. 4.b]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to produce a structure that 385 teaches where the reduction in surface tension takes place with a roller having features, because Cho teaches it is appropriate to make a pattern on a substrate by a roller.

Response to Arguments

7. Applicant's arguments filed 05/11/09 have been fully considered but they are not persuasive. In response to applicant's argument that MacKenzie does not teach problem with adhesion of print pattern in step 3 and therefore Hill would not combine

with it to improve it, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Mackenzie is reasonably pertinent to a particular problem with which Applicant was concerned, namely applying functional material(wiring)to a substrate .MacKenzie does not teach adhesion problem of the print material to the film, because it teaches creating surface with high surface energy for the particles to deposit on it [column 23 lines 45-60] and does not teach the high surface energy surface is created by corona discharge and Hill teaches forming high energy surface by applying corona discharge.

8. In response to applicant's argument that Fletcher is not proper reference to combine with MacKenzie and Hill as it relates to a paper sheet transport system by use of a roller and is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case Fletcher is reasonably pertinent to a particular problem with which Applicant was concerned, namely forming a non uniform charge pattern over a surface of a substrate although the contact structure can be considered as the resist layer (or droplet of resist) and is not only applies for paper substrate and is also applies for plastic (polymer) substrate) [abstract]. The applicant

also argues, Fletcher is not requiring combining with the other two references for rejecting claim 15. However the examiner further adds new reference, Cho et al in which teaches alternative method of patterning by applying the resist with a roller (contact structure) to the surface of a substrate).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TABASSOM TADAYYON ESLAMI whose telephone number is (571)270-1885. The examiner can normally be reached on 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

//Tabassom T. Tadayyon-Eslami/

Examiner, Art Unit 1792

/Michael Cleveland/

Supervisory Patent Examiner, Art Unit 1792